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September 22, 1995

Mr. William Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington DC 20554

Re: Correction to Comments filed in response to Petitions for Reconsideration and Clarification in PR Docket 92-235.

Dear Mr. Secretary:

I am submitting the attached corrected copies of Comments submitted to the Commission by Nippon Telegraph and Telephone ("NTT"), through undersigned counsel, in the above-referenced proceeding.

Due to my oversight, an attachment to the Comments -- NTT's Migration Path Proposal submitted to Project 25, described in page 6 of the Comments -- was not attached to the document submitted yesterday. A corrected copy of the Comments has been sent to each party described on the service list.

I apologize for any inconvenience that my oversight has caused. Please call me if you have any questions regarding the above matter.

Sincerely,

Paul J. Kollmer

Paul J. Kollmer, Esq.

Attachment

cc (w/attachment):
Service List

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them	)	PR Docket 92-235

To: The Commission

COMMENTS OF NIPPON TELEGRAPH AND TELEPHONE COMPANY ON PETITIONS FOR RECONSIDERATION AND CLARIFICATION

Nippon Telegraph and Telephone Company ("NTT"), through counsel, hereby submits its comments on the Petitions for Reconsideration and Clarification that have been filed by various parties in response to the Report and Order ("R&O") issued in the above-captioned proceeding.[1/]

NTT urges the Commission to remain resolute in its efforts to move to narrowband channelization. Specifically, the Commission should reject any proposal that suggests abandonment of the Commission's decision to encourage a rapid transition to very narrowband channelization (i.e., 6.25 kHz or less) of the private land mobile radio spectrum. Indeed, to the extent that the Commission perceives the need to revisit the R&O, it should take the opportunity to maximize the benefits to be obtained through the use of very narrowband technology and provide a mechanism to encourage the use of 5 kHz technology.

1/ Report and Order and Further Notice of Proposed Rulemaking, PR Docket No. 92-235, FCC 95-255 (June 23, 1995) ("R&O").

I. THE COMMISSION SHOULD REJECT PROPOSALS THAT WOULD ELIMINATE OR DELAY THE TRANSITION TO NARROWBAND TECHNOLOGY.

The Commission's R&O is farsighted in that it recognizes that very narrowband technology will be commercially available, and viable, in the very near future, as demonstrated by overwhelming evidence in the record, and that to foster the widespread use of such equipment requires the promulgation of appropriate regulatory incentives. The vast majority of the petitions for reconsideration and clarification recognize this wisdom and do not request any modification of the transition timetable set forth in the R&O.

However, two dissenting voices -- a joint petition filed by Kenwood Communications, Uniden America and Maxon America (hereinafter, the "Joint Petition"), and a petition filed by APCO -- have urged the Commission to slow down or eliminate the transition to very narrowband channelization. Both petitions assert, without offering a scrap of tangible evidence, that the necessary technology is not sufficiently mature to be widely commercially available in the year 2005.

The Joint Petition states that manufacturers should have a three-year period in order to gear up to produce 12.5 kHz equipment, and should be further entitled to a delay of 15 to 20 years -- an entire generation of equipment -- before they should have to produce very narrowband equipment.[2/] First, this

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[2/] Joint Petition at 3.

position reflects a fundamental misunderstanding of the R&O, which does not mandate the production or use of any particular type of technology according to a fixed timetable. Under the R&O, any manufacturer would remain free to sell, and any user free to purchase and use, 25 kHz or 12.5 kHz equipment after 2005; after that date, manufacturers simply could not receive type acceptance for new models that do not meet the spectrum efficiency goals established by the Commission. The Commission is clearly not requiring manufacturers to make equipment for which no market exists; it is setting firm regulatory parameters that will induce the market to move as quickly as possible to narrowband technology.

Second, the Joint Petition suggests that very narrowband equipment is "essentially unproven." Such assertions fly in the face of substantial empirical evidence in the record regarding the viability of very narrowband technology. For its part, NTT has submitted extensive technical materials regarding its 5 kHz RZ SSB technology, including empirical results from field tests in the United States and Japan.[3/] Following its live demonstration of an RZ SSB mobile unit in Denver, Colorado, in March 1995, NTT received extremely favorable reactions and expressions of interest from manufacturers (including Maxon) and

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[3/] See, e.g., Ex Parte Letter from Jeffrey Olson, dated April 25, 1995.

users alike.[4/] RZ SSB has also been recognized by the Technology Compatibility Committee of the Telecommunications Industry Association ("TIA") as "a viable bandwidth efficient linear technology for use in the land mobile arena."[5/]

In stark contrast to the efforts of NTT (and other very narrowband technology advocates) to document the viability of spectrum efficient technology, the Joint Petition simply recites stale claims that such technology remains "unproven," ignoring entirely the record in this proceeding.[6/] There is simply too much hard, unrefuted evidence in the record demonstrating the viability of very narrowband technology for the Commission to abandon its policy goal of enhancing spectrum efficiency.

APCO's Petition for Reconsideration urges the Commission to mandate a definitive timetable for transition by public safety users to more spectrum efficient equipment. It

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4/ Id. See Letters from manufacturers and users in Appendices A and B of NTT's April 25, 1995, ex parte filing.

5/ Letter from Dr. Gregory M. Stone, Co-chairman, TIA TR-8, Technology Compatibility WG8.8, to Paul J. Kollmer dated April 24, 1995, in Appendix C of NTT's April 25, 1995, ex parte filing.

6/ See Joint Petition at 15-18. It should be noted that the Joint Petition, in order to buttress the "parade of horribles" that it claims will occur with the R&O's contemplated transition to very narrowband technology, quotes extensively from 1993 submissions from Motorola. Curiously, Motorola's petition for reconsideration indicates that it does not believe that the R&O will cause the problems cited in the Joint Petition. See Motorola Petition for Reconsideration and Clarification at 2.

advocates transition to 12.5 kHz equipment in all urban areas by 2005, but states that it is not necessary to identify a specific date for transition to 6.25 kHz.[7/]

While NTT does not object to the suggestion that a fixed timetable for transition to more spectrum-efficient technology, APCO effectively advocates abandoning transition to very narrowband channelization. If the Commission were to mandate a fixed 10-year timetable for 12.5 kHz technology but remain silent regarding a transition to 6.25 or 5 kHz, it would essentially rob the R&O of all incentives for the use of very narrowband radio for public safety use.

NTT has no opinion regarding whether the Commission should mandate a fixed timetable for transition to spectrum efficient technology. If the Commission decides to do so, however, it should adopt a fixed timetable for transition to very narrowband technology and decline to mandate 12.5 kHz channelization as a transitional step. NTT firmly believes, and the evidence in the record squarely supports the conclusion, that a 10-year fixed timetable for transition from 25 kHz channels to 6.25 kHz or 5 kHz channels is feasible.

II. THE COMMISSION SHOULD RECONSIDER PORTIONS OF THE R&O AND MANDATE TRANSITION TO 5 kHz TECHNOLOGY.

NTT agrees with the Petitions for Reconsideration submitted by Midland International Corporation and Securicor

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7/ See Petition for Reconsideration and Clarification of APCO at 5-6.

Radiocoms Limited that seek a transition to a 5 kHz channelization plan, rather than the 6.25 kHz plan adopted in the R&O. A transition to 5 kHz technology could be implemented within the same timeframe set forth in the R&O (indeed, from a technical perspective, it could be accomplished much sooner) and would provide a substantial number of additional channels compared to 6.25 kHz channels.

NTT's RZ SSB technology can perform well within a 6.25 kHz or 5 kHz channel. NTT notes, however, that the decision of manufacturers to implement very narrowband technologies such as RZ SSB will be directly affected by the regulatory incentives that the Commission chooses to provide. If the Commission limits the transition contemplated by the R&O to 6.25 kHz, it may reduce the incentive for users to demand, or manufacturers to provide, more spectrum efficient technology.

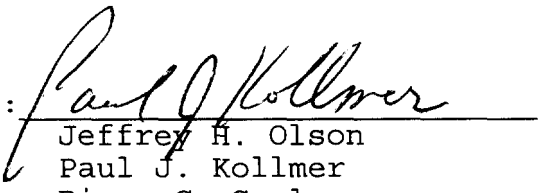
Finally, NTT notes that the Commission should not be discouraged from selecting 5 kHz channelization as its goal out of fear that migration from 12.5 kHz to 5 kHz channels will be more complicated than migration to 6.25 kHz channels. Either migration path will entail identical technical complexities; complexities that lend themselves to readily available engineering solutions. A copy of NTT's 5 kHz migration path proposal submitted to the Project 25 Migration Working Group is attached hereto.

CONCLUSION

The Commission should promote spectrum use that is as efficient as technically possible and reject any proposals to turn the clock back on the goals and accomplishments of the Commission in this proceeding.

Respectfully submitted,

NIPPON TELEGRAPH AND TELEPHONE COMPANY

By: 

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Its Attorneys

September 21, 1995

MIGRATION PATH PROPOSAL TO THE MIGRATION TASK GROUP PROJECT 25

I. Introduction

NTT America, Inc. submits this Migration Path Proposal to respond to the Migration Task Group's request for final proposals for migration from the Phase I system (12.5 kHz) presently proposed for Project 25 to a Phase II system.

NTT America believes that Project 25 should embrace the most spectrum-efficient channelization scheme consistent with the needs of public safety user groups. Therefore, NTT America proposes migration to 5 kHz channelization. This proposal will address migration directly from 25 kHz channelization to 5 kHz channelization (NTT America's preferred approach), as well as two-step migration from 25 kHz to 12.5 kHz, and then from 12.5 kHz to 5 kHz. Although migration to 6.25 kHz would not optimize spectrum efficiency, this proposal will nevertheless address options for such migration.

Migration directly or indirectly to 5 kHz channelization is both feasible and advantageous. NTT's RZ® SSB technology, for example, is capable of transmitting both analog and digital voice, as well as high speed data, in a 5 kHz channel. NTT has demonstrated that the performance of RZ® SSB is comparable with or superior to 12.5 kHz FM technology. Systems based on this technology can be made widely available in commercial quantities within a few years. Some of the important features of RZ® SSB are summarized in the attached Appendix.

While RZ® SSB can be adapted for 6.25 kHz channelization with excellent results, migration to 5 kHz channels utilizing RZ® SSB would provide users with 25% more available spectrum than 6.25 kHz channelization.

II. Migration Paths

As illustrated in Figure 1, five 5 kHz channels can be placed in one 25 kHz channel. This is NTT America's preferred approach for maximum spectrum efficiency.

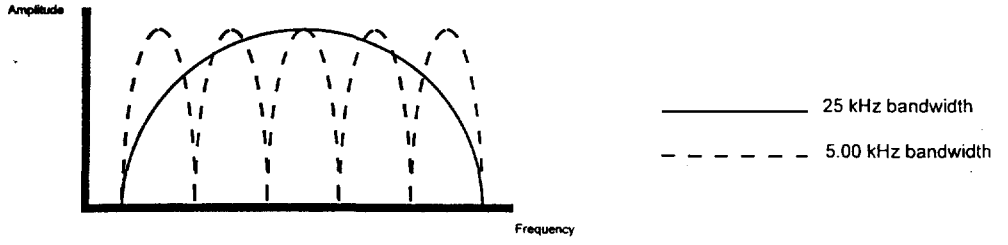

Figure 1.

For two-step migration, five 5 kHz channels can be placed in two 12.5 kHz channels, as illustrated in Figure 2.

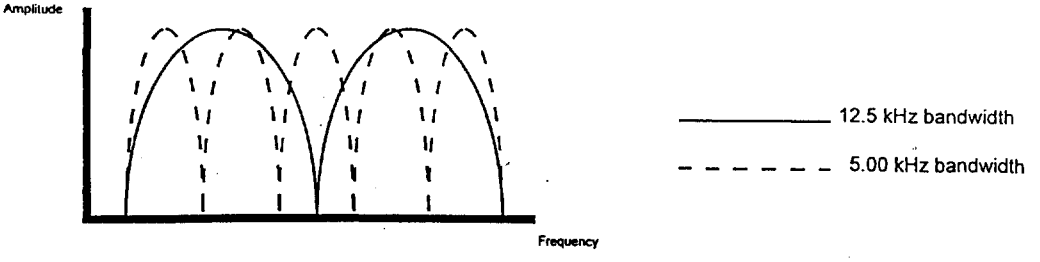

Figure 2.

Although RZ® SSB was designed for 5 kHz operation, it can be readily modified for 6.25 kHz operation by either (i) retaining a 300-3400 Hz information bandwidth, and introducing a proper bandpass filter for system specifications, or (ii) expanding the information bandwidth, thus yielding greater information throughput. NTT's preferred approach is option (i), which allows seamless interface with the public switched telephone network. If 6.25 kHz channelization is used, two 6.25 kHz channels could be placed in one 12.5 kHz channel, as illustrated in Figure 3.

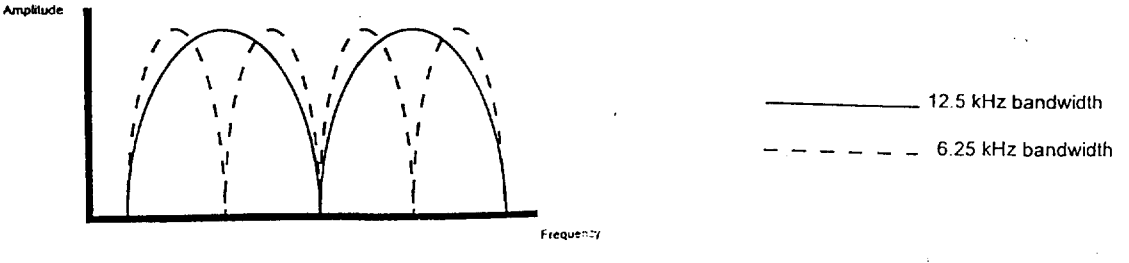

Figure 3.

III. Compliance with Statement of Requirements

NTT America has carefully reviewed the Project 25 Statement of Requirements. Although neither NTT America nor its parent company, Nippon Telegraph & Telephone Corporation ("NTT"), are manufacturers, NTT has vast experience in working with manufacturers to commercialize products based on new technologies developed by NTT, such as RZ® SSB. There is no reason why a manufacturer would be unable to develop and produce commercially viable radios (including portable units) and radio systems based on the RZ® SSB modulation technique adhering to all of the General and Detailed Requirements set forth in the Project 25 Statement of Requirements.

In particular, RZ® SSB can, in contrast to 12.5 kHz systems,[1/] easily meet General Requirement 1, mandating "channel utilization that immediately improves spectrum efficiency by at least two (2) times."

Furthermore, RZ® SSB can be used to communicate analog, digital, and digital encrypted voice, as well as data, in a conventional or trunked environment, as required by General Requirement 2.

RZ® SSB-based radios, including portable units, can be produced that would have a size comparable to existing analog systems. Battery life for portables of at least 8 hours can be expected. Thus, General Requirement 13 can be satisfied.

General Requirement 14 mandates that interconnection to the public switched telephone network must be equal to or superior to current analog systems. In fact, because the information bandwidth of RZ® SSB is equal to that of the telephone network, seamless interface is possible with RZ® SSB.

In addition, an RZ® SSB-based radio system could be produced which would meet the quality and performance requirements (General Requirements 10, 11, and 20-22), the compatibility requirements (General Requirements 5, 15, 16, and 19), the functionality and flexibility requirements (General Requirements 3, 4, 6, 12, 17, 18, and 23-29), and the system management requirements (General Requirements 7-9) of the Statement of Requirements.

1/ The Statement of Requirements in footnote 1 explains how 12.5 kHz channelization will not necessarily meet this efficiency requirement.

With respect to the Detailed Requirements, a radio system incorporating RZ® SSB could support Systems Requirements 1.a.-i. In particular, in conformity with Detailed Requirement 1.a., a system supporting existing 25 kHz and 12.5 kHz channelization, incorporating multimodal technology, could be designed and manufactured in a commercially viable manner. Such a system, within 25 kHz channelization, could support 2-for-1 12.5 kHz channelization. All protocols and procedures could be adaptable to further channel splits technology permitted.

With regard to RF Subsystem Interfaces (Detailed Requirements 2.a.-d.), a radio system incorporating RZ® SSB could support either analog or ISDN standard fixed-network PSTN interfaces for telephone interconnect. Such a system could support a wide variety of computer, network, and channel interfaces, and could support standard service signaling.

A radio system incorporating RZ® SSB could support the Common Air Interface Requirements (Detailed Requirements 3.a.-c.) for voice and data capabilities. For single channel operation, control, voice, or data features could be integrated into a common channel. The service set could be composed of a wide variety of call types, registrations, messaging, encryption, alarm, and user ID functions as detailed in the Statement of Requirements.

With regard to Mobile/Portable Subscriber Unit Requirements (Detailed Requirements 4.a.-d.), mobile/portable units incorporating RZ® SSB could support all specified analog and digital communications conditions. A radio system incorporating RZ® SSB could feature the comprehensive suite of interface and interconnection standards proposed by APCO Project 25 (Detailed Requirements D.1.-5.).

IV. Backwards Compatibility

The quality of narrowband technology, such as RZ® SSB, is sufficiently high to call into question the economic rationale for a Phase I standard as an interim step to a very narrowband standard.

If, however, two-step migration is adopted, in order to maintain backwards-compatibility with Phase I-compliant radios, NTT America proposes requiring that Phase II-compliant radios be multimodal, i.e., able to accommodate both 12.5 kHz Phase I-compliant technology and 5 kHz technology, such as RZ® SSB.

A multimodal radio incorporating RZ® SSB and a Phase I-compliant technology could be developed and produced by a manufacturer to comply with all of the user requirements articulated in the Statement of User Requirements, including, importantly, the size and weight restrictions.

Appendix

Channel Spacing	5 kHz
Information Signal Bandwidth	300 Hz - 3.4 kHz
Illustrative Transmittable Signals	• Voice/Encrypted Voice • G3 Facsimile • Voice-Band Modem
Maximum Speed Handling Capability of G3 Facsimile	9.6 kbps
Maximum Data Handling Capability (Tested)	19.2 kbps
Maximum Spectrum Efficiency (Digital)	3.84 bits/Hz (=19.2 kbps/5.0 kHz)
Illustrative Channel Usage	FDMA(SCPC),TDD,TDMA
Analog Voice Quality	Superior to 12.5 kHz FM
Illustrative Voice Coders	Vocoder, VSELP, PSI-CELP, etc.
Degradations Due To Mistuned Carrier	None
Immunity To Fading And Interference	Strong
Cost Compared To Existing Equipment	Same

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Comments of Nippon Telegraph and Telephone Company was, this 21st day of September, 1995, served by hand or by United States mail, first class postage prepaid, on the following:

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